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Report of State Entomologist of Indiana

**and
List of Indiana Nurserymen
Inspected in 1902**

**By James Croop
Lafayette, Indiana**

**INDIANAPOLIS:
WM. E. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1908.**

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REPORT

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INDIANAPOLIS:
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1903

THE STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
INDIANAPOLIS, January 3, 1903. }

Received by the Governor, examined and referred to the Auditor of State
for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, January 7, 1903. }

The within report, so far as the same relates to moneys drawn from the
State Treasury, has been examined and found correct.

W. H. HART,
Auditor of State.

January 6, 1903.

Returned by the Auditor of State, with above certificate, and trans-
mitted to Secretary of State for publication, upon the order of the Board of
Commissioners of Public Printing and Binding.

CHAS. E. WILSON,
Private Secretary.

Filed in the office of the Secretary of State of the State of Indiana,
January 7, 1903.

UNION B. HUNT,
Secretary of State.

Received the within report and delivered to the printer this 7th day
of January, 1903.

THOS. J. CARTER,
Clerk Printing Bureau.

Report of the State Entomologist OF INDIANA.

To His Excellency, WINFIELD T. DURBIN,
Governor of the State of Indiana:

Sir—In accordance with the provisions of section eleven (11), chapter thirty-eight (XXXVIII) of the General Laws of 1899, I hereby submit my fourth annual report of the work done and expenses incurred by this office during the fiscal year ending October 31, 1902.

The main purpose of this law, as originally passed, was (1) to prevent the further introduction of injurious insects and fungous diseases, notably the San Jose Scale (*Aspidiotus perniciosus*, Comstock) which has caused so many thousands of dollars of damage to the orchards of the State by having been introduced upon nursery stock, and (2) to prevent the further spread of these pests by providing some means of eradicating them from localities where they had already become established.

In order to accomplish the first result the law requires all nursery stock which is shipped into this State from other states to be accompanied by a certificate bearing the signature of the State or Government Entomologist and stating that said nursery stock has been duly inspected according to law. And, as a further precaution, all nurserymen within the State are required to attach a similar certificate to stock sent out from their respective nurseries.

In the second place it is made the duty of the State Entomologist to inspect all nurseries in the State, at least once each year, and also to inspect infested orchards, or those thought to be infested with San Jose Scale, etc., prescribe remedies for their treatment, and see that these remedies are properly administered. It is also manifestly his duty to investigate all other outbreaks of

injurious insects as they may occur from time to time, and to assist whenever and wherever possible in holding them in check. As the San Jose Scale had become well established in several localities in the State before the law was passed, the problem of eradication of this insect has been the most serious one with which we have had to deal.

NURSERY INSPECTION.

My corps of assistants for the past year has been the same as last (1901), except Mr. J. Clyde Marquis, a student of entomology in Purdue University, was appointed in the place of Taylor Fouts, resigned. During the inspection period, which extends from June 1st to October 1st, we have inspected 160 nurseries, which are distributed over fifty-eight counties, extending from the Ohio river to the Michigan line. All except one were found to be apparently free from all dangerously injurious insects or plant diseases and have been granted certificates. The one excepted is located in an infested district with San Jose Scale all around it, and a few infested trees were found in it. For this reason a certificate was withheld.

SCALE-INFESTED LOCALITIES.

Last year I reported the San Jose Scale as having been found in twenty-four counties. To these Montgomery has been added, making twenty-five counties in which the scale has been found to date. Of these only four are considered at all serious. These are Marion, Switzerland, Washington and Vanderburgh. Nine of the originally infested counties are, to the best of my knowledge and belief, practically free from the scale. This has been brought about, in some cases, by adopting heroic measures, that of cutting down and burning, but I am satisfied that the end has justified the means.

Only two infested localities have been found in Marion County outside the city of Indianapolis, and these have been practically cleaned up, but the city itself has been seriously infested. The source of this infestation is not known to me except that the trees were bought from a traveling agent representing some foreign nursery. Owing to the limited amount of means at my disposal, I

was unable to do justice to this place single-handed, but by enlisting the co-operation of the City Forester and Superintendent of Parks, Mr. J. Clyde Power, we have succeeded in accomplishing a large amount of work along this line. A most systematic search was made in every part of West Indianapolis, where the scale was most abundant and both verbal and written notices given to the property owners to remove or spray such trees as were infested with the scale. In addition to this Mr. Power placed a competent man in the field with a spray pump and a supply of petroleum with instructions to cut and burn every tree that was past recovery, and to spray the rest. As a result nearly 2,000 places have been visited in the past two years. More than 1,000 trees and shrubs have been ordered cut and burned, and nearly 500 sprayed. But the scale has found a lodgment in other parts of the city, in some cases near the parks, so that the work here is not yet accomplished by any means. It is to be hoped that the City Park Commissioners will see this matter in its true light and appropriate sufficient funds for carrying on the work during the coming year.

In Jefferson County, where the San Jose Scale was formerly very abundant, especially near the city of Madison, the fruit growers have taken the matter up and have combated it with such success that I now know of but two infested orchards in this county. One of these is near Madison and the other near Hanover.

In Perry County the scale had become well established in two or three localities not far from the Ohio river. My assistant visited that locality in July and prescribed a remedy which was at once applied by those immediately interested. Those trees which were infested the worst were cut down and burned and the remainder were sprayed with the whale oil soap solution. If the general spirit of progress and eagerness to learn how to combat these pests shown by the fruit growers in this locality could be found all over the State the work of the State Entomologist would be reduced to a minimum. It is safe to say that Perry County will soon be free from the presence of the San Jose Scale.

In Vanderburgh County, near the City of Evansville, the situation is different. The San Jose Scale had become well established before it was discovered. Over fifty different orchards and city

lots were found to be infested. A large per cent. of these have been well cleaned up, but other outbreaks are being discovered so that the problem has become a serious one in this locality. My assistant visited this section three times during the past summer and autumn and each time found new localities where the scale existed. In his report he says: "I visited a good many places in the suburbs of the city and found scale at every one. It has become so thoroughly established that it can not be checked except by a wholesale cutting and burning and by a thorough use of the spray pump in the hands of a competent man. The infested trees mostly belong to people who have small places, and as a rule do not like to lose them or to go to the expense of spraying. It requires an official notice for each one, and then a second trip later in order to be sure that the work has been done. Almost all raise some objections to doing the work as required by law."

Here is a marked contrast to the conditions found in Perry County, where the fruit growers are awake to their own interests.

At this point I wish to repeat what I said in my report one year ago, that "in view of the fact that a large part of this section of the State is well adapted to fruit growing, and that numerous commercial orchards are already being developed there, it is exceedingly important that object lessons be given these people in the matter of exterminating or holding in check the various insect and fungous pests of the orchard. This can only be done by placing a competent man in the field with the necessary spraying outfit where the San Jose Scale now exists, and keeping him there until the entire infested district has been covered. This I have not been able to do on account of our meager appropriation, which is barely enough to complete the inspection of the nurseries of the State as required by law."

A little more than a year ago my assistant found the San Jose Scale on some fruit trees in the town of Linton, Greene County. This county probably contains more nurseries than any other county in the State, and so efforts have been made to clean up this scale-infested spot, but most of these town lots are either owned or rented by miners who are not accustomed to the use of spray mixtures or do not have the time to devote to the work of spraying. However, it was found, during the past summer, that many of the infested trees had been cut down and burned and the

instructions followed, except in a few cases ; so that only a few live insects were found ; but the fact that this insect multiplies at such an exceedingly rapid rate* makes it an enemy to be dreaded by every fruit grower and especially by the nurserymen whose premises are located within a few miles of the infested spot.

During the year I have found eight new outbreaks of the scale. One of these is in Montgomery County, near Ladoga, one in Wayne County, near the Fayette County line, two in Jefferson County, already mentioned, and four in Switzerland County. With the exception of Switzerland County, these are all mild cases, being confined to single orchards, and can be easily controlled if looked after carefully.

Those in Switzerland County originated from scale-infested trees received from a nursery in New Jersey some ten or twelve years ago, and so the insects are badly scattered and will have to be carefully watched for some time. A general ignorance concerning the nature of the insect, as well as of the measures intended for its control, has prevented its discovery until recently.

TRANSPORTATION COMPANIES.

Although, doubtless, many packages of trees and shrubs which have not had the required certificate attached, have been brought into the State by railroads and express companies, yet I do not believe that the law has been violated, knowingly, to any great extent. Only two cases of violation of the law by delivering trees without first notifying the State Entomologist have come to my knowledge in the last four years, and I am satisfied that these were done through ignorance of the law.

INVESTIGATIONS CONCERNING OTHER SPECIES.

This was the year for the seventeen-year Locust (*Cicada septendecim*, Linn.) to make its appearance, consequently some observations were made as to the time of its appearance, injury done, etc.

This insect is well known in most parts of the United States and as its name implies, generally requires seventeen years in which to complete its development or life history, although farther south

* It has been demonstrated that a single female scale may become the progenitor of more than 3,000,000,000 of individuals in a single season.

the period of development is shorter, requiring only thirteen years to pass through its transformation. The term "locust" as applied to this insect is misleading, because we are accustomed to associate the name "locust" with the grasshopper family, whereas, in the general division of insects into orders and families, entomologists have placed this one with the Hemiptera or true bugs, the distinguishing characteristics being found in the mouth parts; the grasshopper having well-developed jaws for biting, while the seventeen-year locust has its mouth parts arranged into a stout sucking beak. This latter insect, therefore, can only take its food in the liquid or semi-liquid form and does not disfigure the foliage of plants as does the grasshopper and other leaf-eating insects. The proper name for this insect, therefore, is seventeen-year Cicada (*Cicada septendecim*), and the only real damage done by the adult is during the egg-laying period. Many people have observed this operation during the past summer. The female is provided with a stout ovipositor which she inserts into the young twigs filling the insertion with eggs, repeating the operation until her store of eggs is exhausted. She then soon dies. The eggs hatch in a few weeks and the young then leave the twig and go into the ground and attach themselves to the young roots of plants and feed upon their juices for the next sixteen years, transforming in the spring or early summer of the seventeenth year to the adult or winged state, in which condition it remains only three or four weeks.

As this insect appears only once in seventeen years it naturally creates considerable excitement, especially among the younger people, as the time for its appearance draws nigh. Many stories have been told and many warnings have been issued by the knowing ones concerning the havoc which it is likely to create. In order to ascertain the facts in the case, concerning the amount of damage done, I prepared a list of questions and sent them out about the first of last May, to about 200 of the prominent farmers, sending them to every county in the State. Among the questions asked were these: "Date of first appearance?" "Date of last appearance?" "What species of trees were most injured?" "Did they do much injury to fruit trees, especially to newly set orchards?" As a result ninety-two counties were heard from. Eighty-three counties reported the presence of the insect in more or less abundance, and nine reported none. These were Lake, Porter, Newton,

Jasper, Starke, Pulaski, Adams, Tipton and Randolph—all northern counties. The date of appearance ranged from May 10th in the southern counties to June 1st in the northern, and the time of disappearance ranged from June 10th in the south to June 30th in the north. Twenty counties reported more or less damage to fruit trees, but in almost all cases where serious injury was reported the orchard stood in close proximity to the forest or near where a forest had recently stood. Sixty-two reported no damage to old orchards. In newly set orchards, that is, orchards set out last spring or a year ago this fall, ten reported some damage and sixty-seven reported no injury whatever. It is a well-known fact that this insect prefers forest trees in which to oviposit; but occasionally this rule seems to have been violated, as, for example, in a few instances which came under my observation young nurseries, of one and two-year-old trees, were almost surrounded by a dense forest, and the fruit trees were quite badly damaged. But the insects in these particular localities were exceedingly numerous, and the young and tender branches of the nursery stock afforded a handy place for depositing their eggs. Such circumstances, however, were comparatively rare. Of the more than 150 nurseries inspected, it is safe to say that not one-fourth of 1 per cent. of the trees were permanently injured by this insect.

The accompanying map will show in which counties the Cicada made its appearance.

A tabular statement concerning this insect also follows:

A TABULAR STATEMENT CONCERNING THE SEVENTEEN-YEAR CICADA.

COUNTY.	Place.	Name of Sender.	Did the Locusts Appear?	Portion of County.	Date of Appearance.	Date of Disappearance.	Numerous or Not?	Did They Injure Fruit Trees?	Kinds Suffered Most.	Did They Injure more than Others?
Adams	Monmouth	C. D. Kunkle	No	All	5-20	6-30	Not	No	Apple	No
Allen	Fort Wayne	A. S. Kirtledge	Yes	All	5-20	6-30	Not very	No	All alike	No
Bartholomew	Ellettsbottom	A. S. Taylor	Yes	All	5-20	6-20	Not	No	Apple	No
Benton	Oxford	T. A. Hadwin	Yes	All	5-20	6-20	Not	No	Apple	No
Blackford	Hartford City	T. Clapper	Yes	All	5-20	6-20	Yes	Slight	Apple	No
Brown	Nashville	S. T. Stephenson	Yes	All	5-20	6-15	Yes	No	Forest	No
Brown	Nashville	J. E. Burdick	Yes	All	5-15	6-15	Yes	No	No difference	No
Carroll	Camden	Taylor Kuts	Yes	All	5-20	6-20	Yes	Not much	No difference	No
Cass	Lelandport	O. Powell	Yes	All	5-20	6-16	Yes	No	No difference	No
Clark	Henryville	R. L. Williams	Yes	North	5-15	6-10	Yes	No	No difference	No
Clinton	Center Point	R. L. Kennedy	Yes	All	5-15	6-10	Yes	No	No difference	No
Crawford	Mulberry	D. J. Clark	Yes	All	5-20	6-15	Yes	No	No difference	No
Darvess		J. C. Marquis								
Dearborn	Dillsboro	Henry Bacheson	Yes	All	5-12	6-15	Yes	Yes	Apple	No
Decatur	Greensburg	G. G. Miller	Yes	All	5-12	6-15	No	No	Apple	Yes
Delaware	Danville	L. E. Cochran	Yes	All	5-25	6-20	No	No	Apple	No
Dubuque	Helland	A. W. Shoemaker	Yes	Scattering	5-18	6-20	Yes	Some	Apple, peach	No
Elkhart	Bristol	A. V. Chisart	Yes	All	5-15	6-20	Yes	Near timber	Apple, peach	No
Elkhart	Harrisburg	Grant Williams	Yes	All	5-15	6-20	Yes	No	No difference	No
Fayette	Duncan	G. E. Harrell	Yes	All	5-20	6-25	Yes	No	No difference	No
Floyd	Kingman	J. J. Best	Yes	Center	5-17	6-15	Yes	Yes	Six years old	No
Fountain	Rochester	L. J. Wilson	Yes	All	5-18	6-20	Not	Not much	Apple	No
Franklin	Rochester	L. J. Wilson	Yes	All	5-18	6-20	Not	Not much	All alike	No
Gibson	Owensville	W. D. Johnson	Yes	Northwest	5-20	6-15	No	No	No difference	No
Grant	Madison	Speed Thomas	Yes	All	5-20	6-15	Yes	Yes	No difference	No
Greene	Scottsda	W. C. Bennett	Yes	One township	5-15	6-20	Yes	Yes	Peach	No
Hamilton	Westfield	Yes for	Yes	All	5-15	6-20	Yes	Slightly	Apple	No
Hancock	Greensfield	J. K. Henby	Yes	All	5-16	6-20	No	No	Peach, plum	No
Harpole	Greensfield	J. B. Pfaffner	Yes	All	5-12	6-15	Not	No	No	No
Hendricks	Danville	L. A. Barnett	Yes	All	5-20	6-17	Yes	Yes	No	No

Henry	Rayville	J. Bird & Son	All	5-23	6-20	Yes	No	Peach, plum.	No.
Howard	Kokomo	L. C. Hos	All	5-23	6-20	Yes	No	No difference.	No.
Huntington	Huntington	Ben F. Blitter	All	5-23	6-20	Yes	No	No difference.	No.
Jackson	Freetown	Brownstown Nursery Co.	All	5-15	6-22	Quite	No	No difference.	No.
Jasper	Wassilaer	M. J. Adams	No	5-15	6-20	Not	No	No difference.	No.
Jay	Wall	M. M. Bowman	Yes	5-15	6-20	Yes	No	Small	Yes.
Jefferson	Madison	R. H. Wood	All	5-15	6-18	Yes	No	Nursery stock	No.
Jennings	Hayden	P. B. Ewan	All	5-15	6-15	Yes	No	Timber	No.
Johnson	Franklin	H. P. Dean	All	5-13	6-15	Yes	No	Oak grubs	No.
Knox	Vincennes	H. E. Lochry	All	5-13	6-15	Yes	No	Apple, peach.	Yes.
Kosciusko	Warsaw	J. L. Simpson	In timber	6-1	7-8	Yes	No	Young	No.
Lagrange	Wolcottville	J. L. Cook	South	6-1	6-20	Yes	No	No difference.	No.
Lake	Crown Point	J. C. Grossman	Very few	5-23	6-20	No	No	No difference.	No.
Laporte	Laporte	E. H. Hixon	Yes	5-13	6-15	Yes	No	No difference.	No.
Lawrence	Mitchell	H. W. Henry	Yes	5-16	6-20	Yes	No	No difference.	No.
Madison	Anderson	J. A. Hurton	Near river	5-21	6-15	Yes	No	No difference.	No.
Marion	Lawrence	W. H. Thornburgh	Scattering	5-23	6-15	Yes	No	No difference.	No.
Marshall	Bourbon	W. B. Flick	Yes	5-12	6-15	Yes	No	No difference.	No.
Marshall	Shoals	C. M. Parks	Yes	5-10	6-20	Yes	No	No difference.	No.
Miami	Peru	J. R. Gustin	All	5-16	6-25	Yes	No	No difference.	No.
Montgomery	Clear Creek	E. R. May	All	5-20	6-25	Yes	No	No difference.	No.
Morgan	Montfordville	W. M. Stuart	All	5-20	6-25	Yes	No	No difference.	No.
Newton	Goodland	O. P. Macy	Few	5-25	6-20	Not	No	No difference.	No.
Noble	Wolcottville	S. H. Dickson	Northwest	5-10	6-20	Yes	No	No difference.	No.
Ohio	Rising Sun	G. W. B. Harris	All	5-16	6-20	Yes	No	No difference.	No.
Orange	Rego	G. W. McIntosh	All	5-15	6-15	Yes	No	No difference.	No.
Owen	Spencer	E. L. Daggy	All	5-19	6-22	No	No	No difference.	No.
Parke	Rosedale	T. O. Nevins	Yes	5-13	6-10	No	No	No difference.	No.
Parry	Rome	J. J. Wheeler	All	5-13	6-10	No	No	No difference.	No.
Pike	Petersburg	J. D. Selby	All	5-10	6-20	Yes	No	No difference.	No.
Porter	Furnessville	L. B. Furness	No	5-15	6-25	Yes	No	No difference.	No.
Posey	New Harmony	J. B. Elliott	All	5-15	6-25	Yes	No	No difference.	No.
Pulaski	Pulaski	C. L. Baldert	All	5-16	6-25	Yes	No	No difference.	No.
Putnam	Cloverdale	L. A. Stockwell	All	5-13	6-15	Yes	No	No difference.	No.
Randolph	Winchester	D. Hoffman	All	5-13	6-15	Yes	No	No difference.	No.
Ripley	Runman	E. Sutherland	West part	5-20	6-15	Yes	No	No difference.	No.
Rush	Rushville	T. O. Caliman	All	5-15	6-12	Not	No	No difference.	No.
Scott	Scottsburg	L. B. Stewart	South	5-10	6-10	Not	No	No difference.	No.
Shelby	Shelbyville	Henry Pond	North	5-10	6-10	Not	No	No difference.	No.
Spencer	Hatfield	Smith Hazen	No	5-23	6-15	Not	No	No difference.	No.
Stark	North Judson	Fred Garing	All	5-15	6-20	Yes	No	No difference.	No.
St. Joseph	South Bend	H. C. Swaim	All	5-15	6-20	Yes	No	No difference.	No.
Steuben	Angola	L. C. Smith	All	5-15	6-20	Yes	No	No difference.	No.
Sullivan	Farmersburg	R. Taylor	All	5-15	6-20	Yes	No	No difference.	No.
Switzerland	Vevay	J. R. Porter	All	5-15	6-20	Yes	No	No difference.	No.

A TABULAR STATEMENT CONCERNING THE SEVENTEEN-YEAR CICADA—Continued.

COUNTY.	Place.	Name of Sender.	Did the Locusts Appear?	Portion of County.	Date of Appearance.	Date of Disappearance.	Numerous or Not?	Did They Injure Fruit Trees?	Kinds Suffered Most.	Did They Injure Newly Set Trees more than Others?
Tippecanoe.....	Lafayette.....	S. W. Brady.....	Yes.....	All.....	5-16	6-15	Yes.....	No.....	Apple.....	No.....
Union.....	Liberty.....	Will Ryan.....	No.....	All.....	6-16	6-16	Yes.....	No.....	Apple.....	No.....
Vanderburgh.....	Evansville.....	H. F. McMahon.....	Yes.....	All.....	6-16	6-16	Yes.....	No.....	Apple, peach.....	No.....
Vermillion.....	Clinton.....	J. C. Marquis.....	Yes.....	All.....	6-15	6-16	Yes.....	No.....	Apple, peach.....	No.....
Vigo.....	St. Mary's.....	T. M. Morris.....	Yes.....	All.....	6-25	6-23	Yes.....	Yes.....	Apple, peach.....	No.....
Wabash.....	Lafayette.....	T. J. Ward.....	Yes.....	West.....	6-25	6-20	Not.....	No.....	Timber.....	No.....
Warren.....	Marshallfield.....	G. W. Meyer.....	Yes.....	All.....	6-20	6-20	Yes.....	No.....	Apple, pear.....	No.....
Warrick.....	Bentonville.....	N. W. Slater.....	Yes.....	All.....	6-15	6-5	Not.....	No.....	.....	No.....
Washington.....	Salmon.....	C. C. Ferguson.....	Yes.....	All.....	6-18	6-14	Quite.....	No.....	Near timber.....	No.....
Wayne.....	Richmond.....	E. E. Beck.....	Yes.....	All.....	6-23	6-20	Yes.....	Some.....	.....	No.....
Wells.....	Buffton.....	W. S. Ratliff.....	Yes.....	North half.....	6-20	6-30	Yes.....	No.....	.....	No.....
White.....	Headlee.....	D. C. Chalfant.....	Yes.....	South half.....	6-2	6-20	Yes.....	No.....	.....	No.....
Whitley.....	Columbia City.....	D. C. Teten.....	Yes.....	Few.....	6-25	6-20	No.....	No.....	.....	No.....
		G. R. Kinsey.....	Yes.....							

THE HESSIAN FLY.

CECIDOMYIA DESTRUCTOR Say.

Owing to the fact that but little has been heard of the Hessian Fly during the past season, many have supposed that farmers would not suffer from that cause during the coming year. But numerous letters were received during October and November, stating that the fly was doing much damage to wheat in certain sections of Indiana. These letters were principally from farmers living in the south-central portion of the State.

In order to ascertain as accurately as possible what portions of the State were infested, a circular letter was sent out to over 300 prominent farmers, representing every county in the State, asking for information as to the following data: Presence of the fly, extent of damage being done, date when they were first observed, date of sowing, its presence in late-sown wheat, variety of wheat grown, the use of commercial fertilizers.

Responses have been received from 190 correspondents representing ninety-one counties. Of these seventy-seven counties report the fly as doing more or less damage. Fourteen counties report no fly, which may or may not be true, as it has frequently happened that one man has reported no fly and another man living in another section of the county has reported it as doing considerable damage. Those counties reporting no fly are Lake, Allen, Dekalb, Whitley, Jasper, Newton, Adams, Warren, Vermillion, Owen, Wells, Knox, Starke and Scott. Bartholomew did not report at all. Fifty counties report the damage to wheat as ranging from 15 to 75 per cent. of the crop. Twenty-four counties report only slight damage; and some did not report the amount of damage. The greatest amount of damage is reported from central and southern counties (in Decatur County fifty-two larvae were found in one plant). In sixty-nine counties in which the fly is found, the wheat was sowed before September 25th, while in eight counties it is found in wheat sown after September 25th, but in only one after October 1st. Twenty-seven varieties of wheat are mentioned as being grown in the infested districts, and no one variety is mentioned as being more free from attacks than others. The varieties which are mostly grown are Fultz, Poole, Nigger, Rudy, Harvest King, Red Russian and Mediterranean. Nor does commercial fer-

tilizer seem to lessen the attacks of the fly, although it may appear later that the fertilized fields are in better condition to withstand the attacks of the fly. Of the whole number reporting the fly, sixty-eight report the use of commercial fertilizer. It will be seen that the fly is widely distributed, and in the majority of cases the injury was done to wheat that was sowed before September 25th. In fact it may be said that the injury done to wheat sown after that date is very slight indeed, and probably in most cases would not be noticed were it not known that the fly was in neighboring fields.

In view of the above facts it would seem but reasonable to suppose that, unless some unforeseen condition arises before the spring brood develops, the wheat crop in Indiana for 1903 will be cut short to a very considerable extent.

A newspaper bulletin containing the above facts has been sent to all newspapers in the State, and other information has been given whenever opportunity offered.

The accompanying map shows the distribution of the Hessian Fly by counties. Those counties containing the large black dot are the ones reporting the fly.

FINANCIAL STATEMENT FOR THE YEAR ENDING OCTOBER 31, 1902.

RECEIPTS.

Amount received from State Treasurer on vouchers submitted to State Auditor	\$998 75
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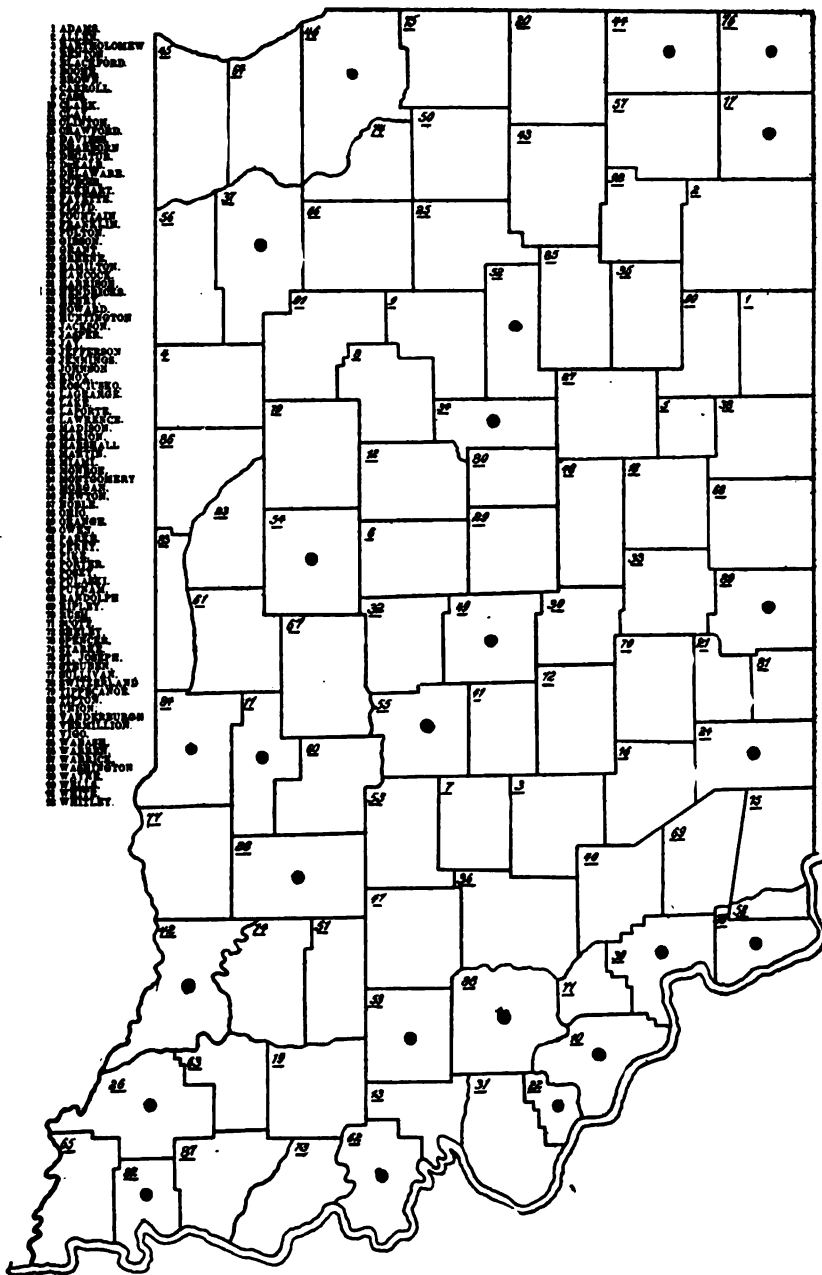
EXPENDITURES.

Traveling expenses, including hotel bills and livery hire	\$290 48
Postage, express, telegrams.....	15 47
Stationery and printing.....	19 05
Per diem of self and assistants.....	673 75
Total expenditures	\$998 75

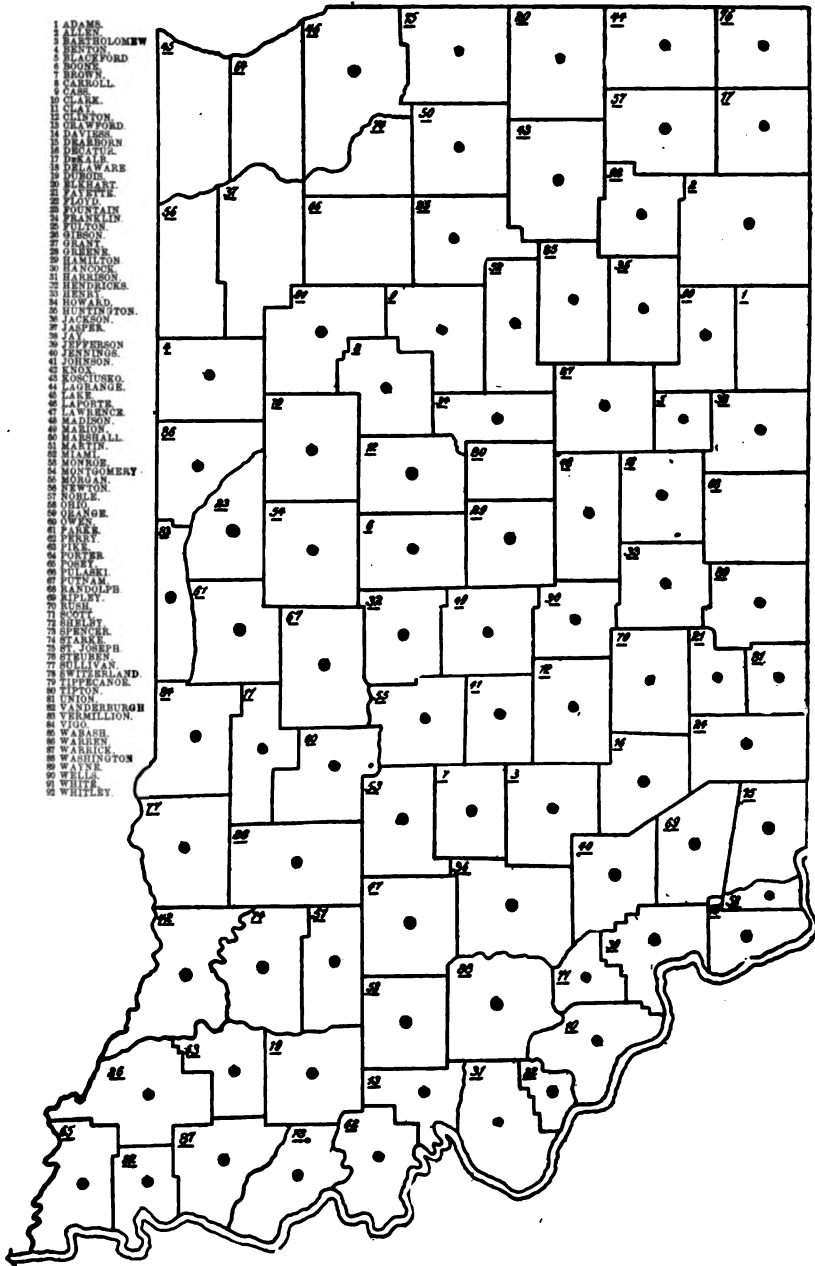
I also append a list of Indiana nurserymen, whose premises were inspected in 1902, together with postoffice address, and the location of nursery and amount of stock under cultivation.

Respectfully submitted,

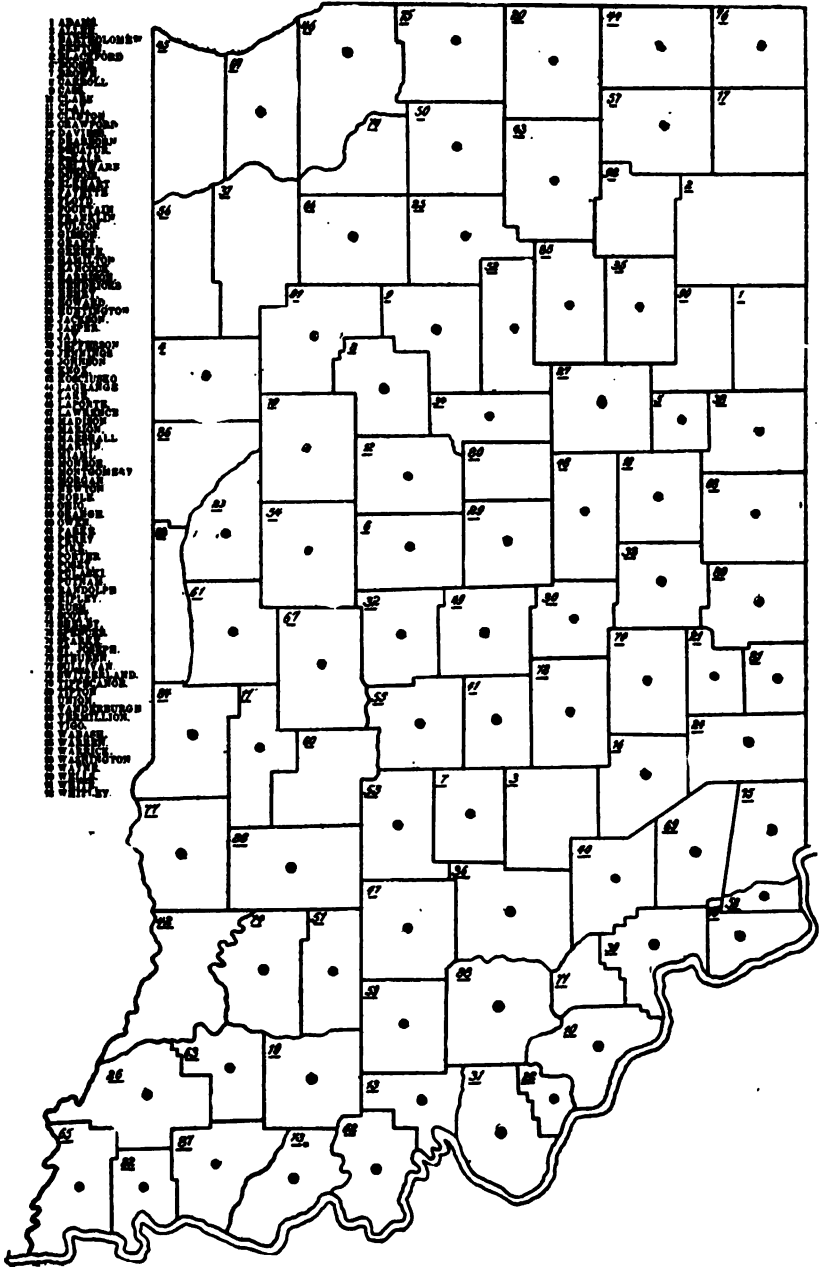
J. TROOP,
State Entomologist.



Map showing the location of the San Jose Scale in 1902.



Map showing presence of the seventeen-year locust in 1902.



Map showing presence of Hessian Fly in 1902.

LIST OF INDIANA NURSERYMEN, INSPECTED IN 1902.

With name and postoffice address, together with amount
of stock under cultivation.

- Adams, Ira E., Linton, Greene County. Location, one and one-half miles north of city. Peach only.
- Albertson & Hobbs, Bridgeport, Marion County. Location, one-half mile west of Bridgeport. Three hundred acres in nursery stock.
- Alexander, J. B., Hartford City, Blackford County. Location, southwest part of city. Dealer.
- Alstott & Son, J. M., Sunshine, Harrison County. Location, one and one-half miles southeast. Four acres.
- Back & Son, Henry, Witt, Dearborn County.
- Baldwin, T. A., Oxford, Benton County. Mostly small fruits.
- Bennett, W. C., Scotland, Greene County. Location, four miles south of Koleen. One hundred acres in trees, two acres in small fruits.
- Bennett, A. S., Lafayette, Tippecanoe County. Location, near city limits. southeast. Twenty acres.
- Bennett, W. S., Carlisle, Sullivan County. Seven acres nursery stock.
- Bennett, S. D., Koleen, Greene County. Location, two and one-half miles southwest. Two acres nursery and one acre small fruits.
- Beuoy, Ran, Matthews, Grant County. Location, one mile west. One acre small fruits.
- Best, John M., Kingman, Fountain County. Small stock.
- Bird & Son, John, Raysville, Henry County. Location, north side of town. Railroad station, Knightstown. Ten acres nursery.
- Baunames, George, Milltown, Crawford County. Small stock.
- Bowman, M. M., Wall, Jay County. Small fruits.
- Bradley, C. P., South Bend, St. Joseph County. Location, three and one-half miles southeast. Twelve acres small fruits. Dealer.
- Bremen Nursery Co., Bremen, Marshall County. Location, just outside of town. Eight acres fruit, shade and ornamentals.
- Bridges, John M., Dugger, Sullivan County. Location, one mile east and two miles south of Bloomfield. Fifty acres in nursery.
- Broshears, Porter, Boonville, Warrick County. Location, one-half mile south. Five acres.
- Browne, Mercer, Spiceland, Henry County. Location, one mile south of Spiceland and one-half mile north of Dunreith. Ten acres in nursery and five in small fruits.
- Brown, Walter, Connersville, Fayette County. Location, near town. Five acres catalpas.

- Brownstown Nursery Co., Brownstown, Jackson County. Four acres.
- Bundy, W. P., Dunreith, Henry County. Location, one-fourth mile north of town. Twenty acres nursery; two acres small fruits.
- Burch, James M., Stanford, Monroe County. Two and one-half acres.
- Burgess, J. S., Depauw, Harrison County. Location, three miles south.
- Burkhart & Son, H. A., Southport, Marion County. Location, three miles south of Indianapolis. Three acres nursery and fifteen acres small fruits.
- Card, John W., Greenfield, Hancock County. Small stock.
- Cathcart, Alva Y., Bristol, Elkhart County. Location, near town. Ten acres in small fruits. Dealer.
- Caylor, John, Ridgeville, Randolph County. Location, eastern limits of city. Five acres tree fruits and shade trees.
- Cochran, L. B., Greensburg, Decatur County. Location, north side of town. Five acres trees, one and one-half acres small fruits.
- Cockrum & Son, W. M., Oakland City, Gibson County. Location, near city. Two acres nursery stock.
- Cook, J. L., Warsaw, Kosciusko County. Seven acres small fruits.
- Cosby, L. C., Washington, Daviess County. Location, two miles southeast. Five acres stock.
- Cunningham & Son, J. H., Sugar Branch, Switzerland County. Ten acres of stock.
- David, Samson, Nashville, Brown County. Location, seven miles north of Freetown. One acre.
- Dean, Hiram P., Greenwood, Johnson County. Location, adjoining town. Ten acres in nursery.
- Dixon, C. S., Bloomfield, Greene County. Location, one mile south of town. Two and one-half acres small fruits.
- Dreyer, J. F., Frankfort, Clinton County. Location, in suburbs. Four acres, mostly small fruits.
- Elckhoff, Ed. A., Gallaudet, Marion County. Location six miles southeast of Indianapolis. Four acres nursery, three acres small fruits.
- Elckhoff, H. C., Julietta, Marion County. Location, four miles southeast of Indianapolis. Ten acres.
- Engles, O., Walton, Cass County. Location, near town. Small fruits. Dealer.
- Erwin, E. E., Underwood, Scott County. Location, near town.
- Fairview Nursery Co., Clinton, Vermillion County. Location, three miles northwest. Small stock.
- Fordyce, O. P., Salem, Washington County. Location, south of town. One acre in nursery.

- Fullhart & Co., Willard, R. F. D. No. 3, Muncie, Delaware County. Location, four and one-half miles southeast. Eight acres in tree and four acres in small fruits.
- Furnas & Co., T. Chalmers, Sheridan, Hamilton County. Five acres, seeds and ornamentals.
- Gaar, W. H. E., Germantown, Wayne County. Location, residence in town, nursery one and one-half miles southeast. Five acres in nursery and three in small fruits.
- Garber, D. M., Pierceton, R. R. No. 1, Kosciusko County. Small fruits.
- Dickey & Garrett, Doans, Greene County. Location, near town. Ten acres in nursery stock.
- Goehler, Albert, Laketon, Wabash County. Three acres nursery stock. Near town.
- Goss, David M., Goss's Mills, Jackson County. Location, six miles south of Freetown. One acre.
- Goss, John, Rockville, Parke County. Small stock.
- Graham, Charles F., New Albany, Floyd County. Location, two and one-half miles northeast of city. Three acres in nursery.
- Graham, J. K., New Albany, Floyd County. Location, resides in city; nursery three miles north. Two acres in nursery.
- Grant, F. M., Lafountain, Wabash County. Location, east side of town. Dealer.
- Gregg, Warren C., Pennville, Jay County. Location, one mile northwest. Eight acres trees and four acres small fruits.
- Grossman, J. C., Wolcottville, Lagrange County. Location, three miles northwest. Two acres small fruits. Dealer.
- Gustin, E. R., Pern, Miami County. Dealer.
- Hand, H. M., Argos, Marshall County. Location, three miles northwest. One acre small fruits.
- Harnish, George, Bluffton, Wells County. Location of nursery, five miles northwest. Resides in town. One and one-half acres nursery, fifty-five acres orchard.
- Hazen, Smith, Hatfield, Spencer County. Location, one mile south. Four acres in nursery stock.
- Heacock, E. E., Salem, Washington County. Location, four miles northwest of town. One acre in trees.
- Heacock, J. W., Canton, Washington County. Location, one-fourth mile north of Canton. One-half acre in nursery.
- Helm, Alwin L., Chandler, Warrick County. Location, five miles west. Six acres in nursery stock.
- Henby & Son, J. K., Greenfield, Hancock County. Location, one mile west. Fifty acres in nursery, fifteen acres in small fruits.

- Henry, H. W., Laporte, Laporte County. Location, one mile northwest of Laporte. Twenty-seven acres of small fruits and five acres of fruit and ornamental trees.
- Hill & Co., E. G., Richmond, Wayne County. Location, one-half mile east. Florists. Two acres in plants and twenty greenhouses.
- Hoagland, George T., Portland, Jay County. Location, five miles north of Redkey. Seven acres small fruits. Dealer.
- Holland, William, Plymouth, Marshall County. Location, two and one-half miles southwest. Twenty acres trees, one acre small fruits.
- Holmes, John W., Wallen, Allen County. Location, five miles southeast of Huntertown. four miles northwest of Wallen. One acre apples and pears. Dealer.
- Hook, L. C., Albany, Delaware County. Small stock.
- Hoppes, John W., Redkey, Jay County. Small fruits.
- Hughel & Son, A., Anderson, Madison County. Location, one mile east. Ten acres in trees and five acres small fruits.
- Irvin, William A., Vincennes, Knox County. Ten acres small fruits and trees.
- Jarret, J. A., Montpeller, Blackford County. Location, two and one-half miles north. Five acres fruit and shade.
- Jeffries, E. T., Boonville, Warrick County. Location, five miles southwest. Three acres.
- Kelly, Samuel, Alert, Decatur County. Location, north end of town. Four acres.
- Kepler, S. W., Pulaski, Pulaski County. Location, five miles southwest of Pulaski. Three acres.
- King, W. E., Scotland, Greene County. Location, five miles south of Koleen. Five acres nursery stock.
- Knaub, Ben, North Vernon, Jennings County. Location, five and one-half miles northeast. One acre.
- Korner, Joseph, Star City, Pulaski County. Location, two and one-half miles west of town. Four acres small fruits. Dealer.
- Kuebler, Theodore D., Evansville, R. R. No. 3, Vanderburgh County. Five acres nursery stock.
- La Hane, William, Chesterton, Porter County. Location, suburbs of the town. Five acres small fruits. Dealer.
- Lenfesty & Atkinson, Marion, Grant County. Shade trees.
- Lucas, John W., Bloomfield, Greene County. Location, four miles east of town. Six acres trees, one acre raspberries.
- Lutes, O., Portland, Jay County. Small stock.
- McClaren, Charles, Sunshine, Harrison County. Location, one-fourth mile southwest. Four acres.

- McCoy, J. E., Bourbon, Marshall County.** Location, one-half mile south. One acre apples and pears, ten acres small fruits. Dealer.
- McEldery, W. E., Boonville, Warrick County.** Location, in town and one-half mile south. Six acres in nursery.
- McGinnis, D. A., R. F. D. No. 1, Andrews, Huntington County.** Location, ten miles south and two west of Andrews. Small fruits.
- McIntosh, George W., Rego, Orange County.** Location, one-half mile southwest. One-half acre.
- Martindale & Hostetter, Doans, Greene County.** Location, near town. Twelve acres in nursery stock.
- Mason, B. F., Martinsville, Morgan County.** Location, seven miles south. Five acres; also ten acres of stock near Martinsville, Ind.
- Melton, J. F., Amboy, Miami County.** Location, in town. Two acres small fruits. Dealer.
- Mercer, T. J., Dillman, Wells County.** Location, seven miles south of Warren. One acre of nursery stock.
- Meredith & Son, Koleon, Greene County.** Location, two and one-half miles southeast. Forty acres in nursery stock; one acre small fruits.
- Miller, Thad. Tulip, Greene County.** Small stock.
- Milhouse, Jesse G., Ezra, Jennings County.** Location, four and one-half miles southeast of Butlerville. Two acres.
- Milhouse, Frank, Hyde, Jennings County.** Location, five miles southeast of Butlerville and one and one-half miles east of Hyde. Three acres nursery.
- Minnick, Henry, Converse, Miami County.** Location, three and one-half miles northeast. Three acres apples, cherries and pears.
- Moore, C. B., Monticello, White County.** Location, two miles west of Monticello. Two acres.
- Morris, Thomas M., Clinton, Vermillion County.** Small stock. Dealer.
- Moyer, G. N., Laketon, Wabash County.** Location, one and one-half miles south. Forty-five acres nursery stock, thirty acres of fruit.
- Morris, Thomas B., Richmond, Wayne County.** Location, one mile east. Four acres nursery and one-half acre small fruits.
- Morrison, O. A. J., Middle Fork, Clinton County.** Location, six miles south of Michigantown. Carolina poplars. Dealer.
- Morton, William H., Galena, Floyd County.** Small stock.
- Osborn, Adam, Bloomfield, Greene County.** Location, three miles north. One acre in trees.
- Patterson, P. T., Bloomfield, Greene County.** Location, one mile south of town. Two acres in trees and three in small fruits.
- Paxson & Son, George, Pennville, Jay County.** Location, three miles northwest. Two acres tree fruits, one-half acre small fruits.

- Peffley, T. J., Dora, Wabash County. Twenty acres small fruits and sixty acres in orchard.
- Penington, Mary, Vernon, Jennings County. Location, one and one-half miles southwest. Two acres, mostly small fruits.
- Perry, Alex., McCutchanville, Vanderburgh County. Small stock.
- Phelps, William, Noblesville, Hamilton County. Location, two miles southeast. Five acres trees, ten acres small fruits.
- Phillips Bros., Hobbleville, Greene County. Location, one-half mile north. Twenty-eight acres in tree fruits.
- Polk, W. R., Tobinsport, Perry County. Location, one-half mile west. Small stock.
- Potter, E., Redkey, Jay County. Location, five and one-half miles north. Two acres small fruits.
- Preble, A. C., Marion, Grant County. Location, 212 South Adams Street. One acre in nursery stock. Dealer.
- Ragle, Amos, Elnora, Daviess County. Location, south side of Elnora. Twenty-five acres trees, four acres small fruits.
- Randolph Bros., Lafayette, Tippecanoe County. Location, three miles southeast. Fifty acres.
- Reed Nursery Co., Harrell, Jefferson County. Location, two and one-half miles southeast of Harrell. Five acres in nursery.
- Reed, W. C., Vincennes, Knox County. Location, four miles southeast. One hundred and fifty acres nursery stock. Twenty-five acres small fruits.
- Rogers, Hugh, Knox, Starke County. Location, one mile south. Three acres small fruits. Dealer.
- Rogers, R. S., Bloomfield, Greene County. Location, two miles north-west of town. Three acres small fruits.
- Roth, Daniel, Boonville, Warrick County. Small stock.
- Scott, Charles H., Winamac, Pulaski County. Location, one and one-half miles southeast of town. One acre trees, fruits and ornamentals.
- Sanders, Mrs. Jane, Westville, Hamilton County. Small stock.
- Semon, H. C., Benville, Jennings County. Location, one and one-half miles east in Ripley County. One and one-half acres stock.
- Sharp, G. H., Linton, Greene County. Small stock.
- Simpson & Sons, H. M., Vincennes, Knox County. Location, two miles east. Fifty acres in nursery stock. Twenty-five acres small fruits.
- Sleeper Bros., Fowler, Benton County. Four acres.
- Smith, W. F., Battleground, Tippecanoe County. Five acres near town.
- Smith, Al B., Garfield, Montgomery County. Location, five miles north-east of Crawfordsville. Two acres small fruits.
- Smith, W. H. H., Medaryville, Pulaski County. Dealer.

- Smith, W. T., Grandview, Spencer County. Location, near town. Six miles from Rockport. One-half acre.
- Snoddy Nursery Co., Lafayette, Tippecanoe County. Dealers.
- Snoke, J. W., South Bend, St. Joseph County. Location, in town. Dealer.
- Stacey, W. E., Lyons, Greene County. Location, nursery two miles north. Six acres nursery, one of small fruits.
- Stineman, Jonas, Wawpecong, Miami County. Location, six miles east of Bennetts. Dealer.
- Stinger, B. F., Charlottesville, Hancock County. Location, residence in town. One and one-half miles north. Strawberry plants only.
- Stout, W. C., Monrovia, Morgan County. Location, six miles from town.
- Swalm, H. H., South Bend, St. Joseph County. Location, three miles southwest. Six acres small fruits. Dealer.
- Teas, E. Y., Centreville, Wayne County. Location, three miles northeast. One and one-half acres, mostly ornamentals.
- Terrell, W. T., Bloomfield, Greene County. Location, one-half mile north of town. Thirty acres in trees and two acres small fruits.
- Trook, John N., Converse, Miami County. Location, in town. Dealer and jobber.
- Truex, G. W., Lockman, Brown County. Location, seven miles north of Freetown. One acre.
- Vernia, Mrs. Elizabeth, New Albany, Floyd County. Location, three miles southwest of city. Two acres in nursery.
- Wabash Valley Nursery Co. (J. B. Evans), Bluffton, Wells County. Location, adjoining the town on west. Thirty acres mixed stock.
- Walker & Son, F., New Albany, Floyd County. Location, two miles northeast. Five acres in nursery.
- Ward, J. O., Huntington, Huntington County. Location, edge of city. Two acres of trees.
- Ward, T. J., St. Marys, Vigo County. Location, two and one-half miles northeast of St. Marys and six miles northwest of Terre Haute. Ten acres of nursery and twenty-five in orchard.
- Warren, D., Nora, Marion County. Lives near Carmel.
- Wason, Charles, Westfield, Hamilton County. Location, two miles east. One and one-half acres Carolina poplars, one acre small fruit.
- White, Harry, New Holland, Wabash County. Location, ten miles southeast of Wabash. Eight acres small fruits. Florist and dealer.
- Wickizer, James M., Plymouth, Marshall County. Location, two miles south. Eight acres small fruits. Dealer.
- Williams, John J., Warren, Huntington County. Location, near town. Dealer.

Wilson, J. M., North Judson, Starke County. Location, near town.
Small fruits.

Winchell, G. W., Tobinsport, Perry County. Location, northeast of W. R.
Polk. Small stock. Six acres small fruits.

One acre tree fruits and ornamentals.

Witwer, J. B., South Bend, St. Joseph County. Location, one mile east.
Wright Nursery Co., J. M. T., Portland, Jay County. Resides one mile
west. Thirty-eight acres fruits and shade trees.

Young, George C., Greensburg, Decatur County. Location, one mile
southeast. One acre nursery and one acre small fruits.

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